



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,383	07/28/2001	Shi-You Ding	NREL01-37	9967

23712 7590 03/03/2004

PAUL J WHITE, SENIOR COUNSEL
NATIONAL RENEWABLE ENERGY LABORATORY (NREL)
1617 COLE BOULEVARD
GOLDEN, CO 80401-3393

EXAMINER

PATTERSON, CHARLES L JR

ART UNIT	PAPER NUMBER
----------	--------------

1652

DATE MAILED: 03/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,383

Applicant(s)

DING ET AL.

Examiner

Charles L. Patterson, Jr.

Art Unit

1652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24, 27-35, 43, 44, 48-54 and 58-68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24, 27-35, 43, 44, 48-54 and 58-68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7/28/01 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Art Unit: 1652

The disclosure is objected to because of the following informalities:

Figure 2 is objected to because it is not a good copy and the words especially are unclear. Some of the words cannot be read, such as the footnote at the bottom, and all of the words in column 1 are fuzzy and/or unclear. Applicants have submitted another copy of the figure that is essentially the same as the original with a notation that "[t]his is the best available copy." If this is the best available copy then another copy of the figure that is legible must be made. Correction of drawings may no longer be held in abeyance (37 CFR 1.85).

Appropriate correction is required.

It is noted that applicants have submitted another written sequence disclosure with changes in SEQ ID NO:6, 7, 8 but have not submitted a new CRF. The errors noted in the previous action are still present in the CRF that is of record in the application. In order to correct the error, applicants must submit another CRF.

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-24, 27-35, 43, 44, 48-54 and 58-68 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-11,

Art Unit: 1652

26, 27, 36-43, 44, 45 and 69-74 of copending Application No. 09/917,384.

This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

Application 09/917,384 contains SEQ ID NO:1, 2, 4, 5, 7 and 8 that are 100% identical with the same sequences in the instant application. Since SEQ ID NO:1 encoded by SEQ ID NO:2 is supposed to be the enzyme claimed in claim 1, all of the claims of the instant application are provisionally rejected over all of the claims of 09/917,384, even though the instant application is drawn to "GuxA" and 09/917,384 is drawn to "Gux1". Exactly what the claims would be at allowance of either application is not known and since the sequences are identical, all of the claims are rejected under 35 USC 101 double patenting rather than some of the claims being rejected under obviousness-type double patenting.

Applicants state that they have reviewed the sequences for both applications and find them different. They state that the sequences of both applications are included as an appendix to this response. There was a new written sequence disclosure and a marked up copy of that written sequence disclosure included with this action, but the examiner cannot find a written sequence disclosure of 09/917,384. The examiner has included a printout of the sequence search for the instant application that was completed 5/9/03, that shows the instant 6 sequences identical in this application and 09/917,384.

Claims 22-24 and 68 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific substantial asserted utility or a well established utility. This rejection is repeated for the

Art Unit: 1652

reasons given in the last action. Applicants arguments have been carefully considered but do not overcome the instant rejection.

Applicants argue that "several utilities are asserted and supported by the specification", but applicants have not addressed the particular reason these claims were rejected under 35 USC § 101. As stated previously, the instant claims are drawn to "a heterologous combination" of the GH6 and GH12 catalytic domains and the CBDII and CBDIII carbohydrate binding domains. This would appear to be the enzyme shown in Fig. 1 minus the signal, FnIII and linker domains in no particular order. Although Example 4 discusses combining the domains of the instant enzyme with those of other enzymes, there is no teaching that it will have any activity or other utility. These claims are drawn to supposedly removing the signal, FnIII and linker domains from GuxA and there is no limitation on what the order is or whether other elements are added. This embodiment has not be shown to be operable in the instant specification.

Claims 22-24 and 68 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.]]]]]

Claims 27, 28, 35, 43, 44, 48-54, 63-67 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a new matter rejection.

Art Unit: 1652

Applicants have added the phrase "and having a functionality of at least one of glycosyl hydrolase family 6 and glycosyl hydrolase family 12" to claim 27. Absent a very convincing showing to the contrary it is maintained that the functionality of these two groups is not defined in the specification and therefore one of ordinary skill would not know what is within the metes and bounds of these claims. As it is deemed that it is essential matter in that it is a limitation of the instant claims, if the functionality of these two enzyme families is shown by some other reference, it must now be entered into the specification with a showing that it is taught in a prior art reference. It is noted that "glycosyl hydrolase family 6 and glycosyl hydrolase family 12" is referred to in claim 27 whereas in applicants' arguments "GH6 and GH12" are referred to. If these two recitation refer to the same thing, applicants should point out where this is taught.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1652

Claims 27, 35 and 43 are rejected under 35 U.S.C. 102(b) as being anticipated by Sakon, et al. (U). This rejection is repeated for the reasons given in the last action. Applicants arguments have been carefully considered but do not overcome the instant rejection.

Applicants argue that "[c]laim 27 has been amended to recite the functionality of at least one of family GH6 or GH12, and this distinguishes Sakon". The examiner does not agree. As discussed in the 35 USC § 112 first paragraph rejection *supra*, neither "glycosyl hydrolase family 6 and glycosyl hydrolase family 12" nor "GH6" and "GH12" functionality is defined in the specification. Absent such a showing the instant rejection is maintained.

Claims 1-21, 27-35, 43, 44, 48-54 and 58-67 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over either of Tucker, et al. (AA), Adney, et al. (AB), Himmel, et al. (AC), Lastick, et al. (AD) or Barker, et al. (AJ). This rejection is repeated for the reasons given in the last action. Applicants arguments have been carefully considered but do not overcome the instant rejection.

Applicants argue that the distinction between GUXA and the enzyme of the instant references can be shown by their molecular weights. They then state that "[t]he molecular weight of GUXA is 124,597 Daltons". Applicants do not point out where in the instant specification this is taught and the examiner has reviewed the specification and cannot find this teaching. It is then stated that Adney, et al. teach "molecular weights of 57,420 to 74,580" in column 7, lines 61-62. This is not what is taught by the instant reference but rather "endoglucanase I and II, which have been found to have molecular weights respectively of between 57,429 to 74,580 daltons and between

Art Unit: 1652

about 50,000 to about 70,000 daltons", column 7, lines 59-63. Furthermore, it is taught in column 6, lines 26-28 that "[t]he molecular weights of these enzymes [high molecular weight endoglucanases] are found to range from about 156,600 to about 203,400 daltons". They then argue that Himmel, et al. teach a molecular weight of "52,500 daltons" and Tucker, et al. teach "156,600 to 203,400 Daltons...[in] Examples 7-8". Himmel, et al. teach a high molecular weight enzyme of 52,500 obtained by SDS PAGE. Tucker, et al. teach a molecular weight of "about 156,600 to about 203,400 daltons" in column 5, lines 63-64 and another enzyme of "between 57,429 to 74,580 daltons and between about 50,000 to about 70,000 daltons" in column 7, lines 34-36, both obtained by size exclusion chromatography. In addition, other celluloses are taught in the Background, Summary and Prior Art of these references.

Some of these molecular weights were obtained using size exclusion chromatography and some using SDS PAGE. Multimers are known to give higher molecular weights in size exclusion columns vs. SDS PAGE gels and also the results obtained from size exclusion columns are known to be affected by the ionic strength of the buffer, sometimes greatly. Therefore, absent some more convincing proof to the contrary, the rejection over these references is maintained. It is further argued that Adney, et al. disclose an N-terminal sequence that is not found in GUXA. As noted *supra*, Adney, et al. teach more than one enzyme so that this point does not overcome the rejection.

Applicants then state that "Lastick, et al... references the cellulases described in Tucker, et al. (column 2, line 66 to column 3 at line 2)". The Tucker, et al. reference has been previously addressed and in addition it is pointed out that a cellulase enzyme is taught in column 10 of the reference. It is further argued that Baker, et al. "reports using only 'endo 1', which is the same as Endo I reported in 5,275,944...[which is] a companion case...to US

Art Unit: 1652

5,110,735. U.S. Patent 5,275,944 is apparently not related to 5,110,735, as it does not claim priority to it nor is the title the same or closely related, and furthermore 5,110,735 has already been discussed *supra*.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles L. Patterson, Jr., PhD, whose telephone number is 571-272-0936. The examiner can normally be reached on Monday - Friday from 7:30 to 4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathapura Achutamurthy, can be reached on 571-272-0928. The fax phone number for the organization where this application or proceeding is assigned is 703-308-4242.

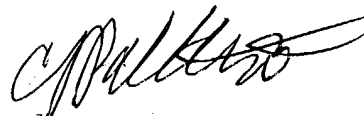
Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or

Application/Control Number: 09/917,383

Page 9

Art Unit: 1652

Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Charles L. Patterson, Jr.
Primary Examiner
Art Unit 1652

Patterson
March 1, 2004